

IN THE ABSTRACT:

The abstract has been amended as follows:

In a method for vapor-depositing a substrate with a layer of a needle-shaped x-ray fluorescent material containing at least one alkali metal, alkali ~~halogenide~~ halide phases and an alkali ~~halogenide~~ halide are mixed in a vapor phase and are vapor-deposited on the substrate. A needle-shaped fluorescent material is thereby produced having the formula

$$\left((M^{+} H^{-})_a (M'^{+} H'^{-})_{(1-a)} \right)_k : (M^{+} S^{z+} H^{-} H''^{-z+y})_b (M'^{+} S^{z+} H'^{-} H'''^{-z+y})_c \\ (M^{+} S^{z+} H'^{-} H'''^{-z+y})_d (M'^{+} S^{z+} H'^{-} H'''^{-z+y})_e$$

wherein M^{+} is at least one metal ion from the group Na, K, Rb and Cs, H^{-} is at least one ~~halogenide~~ halide from the group F, Cl, Br and I and S^{z+} is at least one lanthanide ion from the group La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb or Lu.